

# eleXsys™

Electricity Export System from Planet Ark Power



This technology is game changing – you need to think **100 times bigger**

Christoph Frei,  
Secretary General & CEO  
World Energy Council



Planet Ark Power could be Australia's first renewable energy **Unicorn** (\$B company)

Dr Renate Egan  
Chair Australian PV Institute and Associate Professor UNSW



eleXsys™ is **revolutionary** – it's as big as the original electrification of the USA 100 years ago. It will change the whole electrical industry.

Aurecon  
A Global Engineering Consultancy



An Aurecon report validates that eleXsys™ can manage grid voltage and increase the distribution grid hosting capacity for DER (rooftop solar and VPP batteries) by up to 1,300%

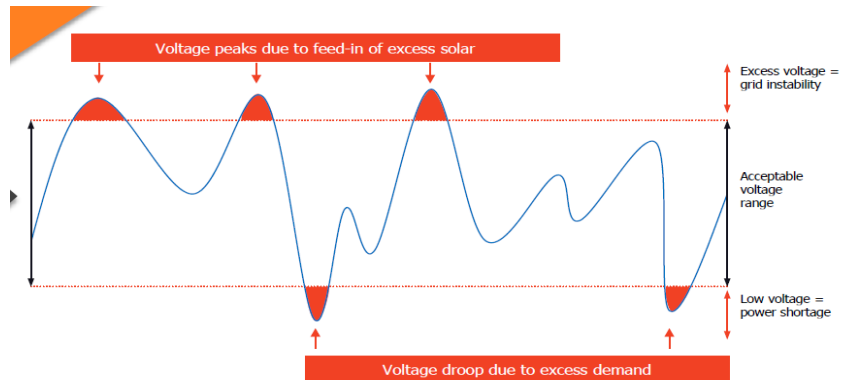
eleXsys™ is an Ai based technology platform that radically speeds up global decarbonisation

# eleXsys™ Speeds Up Global Decarbonisation

## PROBLEM # 1 – a one-way electricity grid:

- The global electricity grid was designed as a one-way grid – sending energy from large coal, gas and nuclear distant power plants to the suburbs
- The grid can handle a small amount of electricity flowing backwards, around 15%. Excess rooftop solar fed into the distribution grid increases the backward flow of electricity above this 15% limit and creates grid instability.

Excess solar fed into the distribution grid causes voltage instability so the grid imposes "Zero Export" or Solar Curtailment restrictions



- This drastically limits the amount of rooftop solar that can be cost effectively installed or imposes huge capital costs on the distribution grid driving significant price increases.
- To achieve global decarbonisation, we need to “electrify everything”, from transport to HVAC. This requires the increase in electricity flow in suburbs by up to 400%, costing the distribution grid \$ Trillions.
- Adding large solar and wind farms is not the answer either as society needs to invest further \$ Trillions to build new transmission lines to move the clean energy into the suburbs. Costs are passed on in higher energy bills.

## eleXsys™ SOLUTION # 1 – creates a two-way electricity grid:

- eleXsys is disruptive as it fixes the voltage problem caused by rooftop solar on the customer side of the grid. It’s almost the Uber of the utility industry, saving the utilities most of the CAPEX investment.
- A customer side grid solution is far more cost effective, paid for by customer’s increased energy savings. This increases the grids rooftop solar hosting capacity by up to 1,300% – creating a true digital two-way grid and the cost effective “electrification of everything”.
- The difference vs. Uber is we are a friend to the grid – solving a massive problem holding back decarbonisation and drastically increasing the grids ROE. Of critical importance:
  - Turns rooftop solar + batteries into a new bankable Asset Class in addition to solar & wind farms, *and*
  - Make batteries behind the meter viable “today” without any subsidy, *and*
  - In Australia, rooftop solar can deliver 130% of our energy needs, if cost-effectively installed. This is similar in the sunbelt across the globe in which up to 80% of our world population resides.
- The business model is to scale globally using a SaaS licensing approach – in which eleXsys becomes the “Intel Inside®” equivalent of the rooftop solar & battery industry.

## HOW # 1:

- IoT device plus multiple levels of Ai
- Installed beside the solar inverter
- Uses less than 1% of the solar energy to keep voltage within statutory limits for a 2-way grid
- Invented the “Smart Phone” of power electronics that can hold multiple “Apps”
- Replaces numerous devices into one
- Installed on a SaaS basis, share in the savings

**But How?**  
 Patent pending technology we call eleXsys™  
**A + B = eleXsys™**

**Full Reactive Power + Grid Forming**

**A SiC Advanced Digital Device**  
 More efficient plus 20 to 50 times smaller, less heat and cheaper due to SiC & high frequency. Plus multiple functions in 1 so eliminates multiple devices.

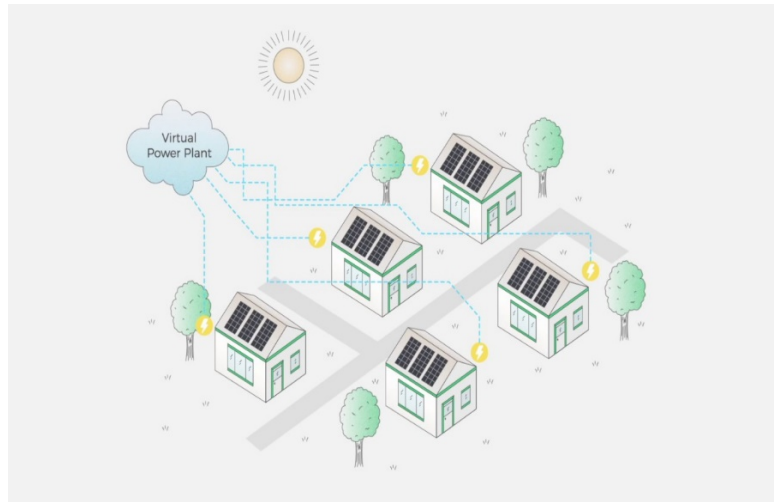
**B Multiple Levels of Ai based Software**

# eleXsys™ Speeds Up Global Decarbonisation

## PROBLEM # 2 – offgrid clean energy is expensive

- Clean energy in rural locations, remote locations and the developing world is very expensive

- To make a microgrid work 24 x 7 and not be connected to the grid, you need:
  - A) Diesel generator to run 24 x 7, or
  - B) Very large batteries
- The diesel generator or large batteries are required to provide energy on demand, also called a grid reference point to keep the local grid in balance
- This makes the cost of energy per KWh very expensive



## eleXsys™ SOLUTION # 2 – up to 75% cheaper offgrid microgrid clean energy

- eleXsys™ delivers clean energy up to 40% lower than current grid and current renewable microgrid options and up to 75% cheaper than a diesel based microgrid
- eleXsys™ includes a grid forming inverter which eliminates the need for a grid reference point to keep the local grid in balance. This eliminates the large diesel Gensets to operate 24 x 7 or large batteries to provide the grid reference point.
- Scale globally using a SaaS licensing approach – license the whole renewables supply chain

### HOW # 2:

- New eleXsys™ solution is:
  - Solar + much smaller batteries + eleXsys™ + small biodiesel Genset to back up batteries

Big, bold impact! Each “Use Case” creates a \$Billion market	
<p><b>1) Replace coal power with Rooftop Solar Farms + Batteries</b></p> <ul style="list-style-type: none"> <li>• Fill big warehouse and factory rooftops with solar + multiple containers of batteries onsite</li> <li>• 1,000 building rooftops for each of the 21 coal power stations in Australia so \$75 Billion AUD over 10 years</li> <li>• Tenant gets cheap clean energy; landlord receives rent for the roof and Asset Co earns 20 year ROI</li> </ul>	<p><b>2) Solar to power desalination to run massive greenhouses</b></p> <ul style="list-style-type: none"> <li>• Sundrop Farms example – the solar tower was heavily subsidised, so concept is not replicable</li> <li>• eleXsys reduces energy costs by up to 75% making the whole farm replicable on a global scale</li> </ul>
<p><b>3) Clean – cheap offgrid microgrid energy for farming</b></p> <ul style="list-style-type: none"> <li>• Clean energy to large farm operations at around 40% less than they are paying now to retailers</li> <li>• Plus, rural grid is constrained – can’t install micro processing to improve production and earn more \$</li> </ul>	<p><b>4) 40% Savings in Data Centers - \$ and GHG</b></p> <ul style="list-style-type: none"> <li>• Less floor space, replace multiple units with one eleXsys™ unit, reduce HVAC, reduce battery sizes, etc</li> <li>• Data Centers have same carbon footprint as aviation industry</li> </ul>
<p><b>5) Less CAPEX &amp; More Revenue for Solar &amp; Wind Farms</b></p> <ul style="list-style-type: none"> <li>• More cost effective solution to fix voltage related problems that impact performance</li> <li>• eleXsys™ can replace Synchronous Condensers for less CAPEX and OPEX</li> <li>• “Congestion” creates voltage and other Marginal Loss Factor issues that eleXsys™ can improve</li> <li>• eleXsys™ makes batteries more efficient increasing ROI</li> </ul>	<p><b>6) Makes EV fast charging more cost effective</b></p> <ul style="list-style-type: none"> <li>• Significant grid connection costs for EV Fast Charging, usually requiring large batteries as a buffer</li> <li>• Plus, the grid imposes significant operating costs through high demand charges</li> <li>• eleXsys™ reduces both the CAPEX and OPEX</li> </ul>